

Written evidence from Prospect

Introduction

Prospect is a trade union with over 150,000 members representing specialists and managers in the public and private sectors across a number of industries.

Prospect's Aviation Group represents over 5,000 professionals working across the industry for employers including airlines, airports, air traffic control services and the Civil Aviation Authority. Prospect also represents skilled and specialist workers across a range of relevant sectors including aerospace, energy, R&D, climate science and environmental conservation.

Prospect is clear that we face a climate emergency. We welcomed the UK commitment to achieving net zero emissions and called for clarity on a pathway that will ensure that necessary measures are properly resourced and implemented as soon as practicable. Our members have told us that climate change is an issue of great importance to them and one they want the trade union to act and campaign on.

Prospect members working in aviation are no exception to this. A survey conducted in early 2020 found that 76% of members working in air transport said the issue of climate change was important to them personally. Asked to pick which issues they most wanted the union to campaign on, "the environment" was one of the most popular choices, ranking fourth out of ten options.

Therefore we welcome the Committee's inquiry into Net zero aviation and shipping. Our submission is based on consultation with our members working in aviation and the expertise we can draw on across a wide range of relevant specialisms and sectors. We focus on aviation though some points in relation to R&D around alternative fuel and energy sources are also relevant to the shipping sector.

Aviation's economic importance and "building back better"

The UK's aviation's sector is a vital source of employment and a critical part of the country's essential economic infrastructure. In 2016, it was estimated to contribute over £52bn to our GDP, support almost a million jobs, and facilitate the trade £140bn of tradeable goods¹ - figures which will have grown significantly in subsequent years.

As the Government has recognised, aviation also has a critical role to play in supporting regional growth and rebalancing. The UK's local and regional airports serve as "hubs for growth within and beyond the region in which they are situated", providing quality employment opportunities and vital connectivity.² Those with long-haul networks such as Bristol, Belfast international, Manchester, Newcastle, Glasgow and Edinburgh provide their surrounding regions with invaluable access to global markets.

Levels of traffic have of course been sharply suppressed during the Covid-19 pandemic, but it is clear that if we want to see a strong economic recovery over the next few years then a recovery of our aviation sector will have to be part of that.

But this does not mean aviation needs to be excluded from the imperative to "build back better" with an economy that is greener as well as fairer and more inclusive. The Committee on Climate Change has envisaged growth in aviation demand of 25 per cent above pre-pandemic levels over the next thirty years consistent with the achievement of the Government's net zero target.³ The aviation industry has argued that an ambitious

¹ <https://airlinesuk.org/wp-content/uploads/2016/02/SA-Socio-Economic-Report-Final.pdf>

² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/769696/aviation-2050-print.pdf

³ <https://www.theccc.org.uk/publication/letter-international-aviation-and-shipping/>

decarbonisation “road map” could render a 70 per cent growth in passengers consistent with reducing net carbon emissions to zero.⁴

But for these futures to be possible we need decisive action now. The rest of this submission highlights some areas of particular importance for Prospect members. It is not intended to serve as a comprehensive overview of what needs to be done, but to highlight where our members see particular obstacles and opportunities.

Air traffic management and airspace modernisation

Prospect members working at National Air Traffic Services are acutely aware of the importance of air traffic management and airspace design to improving fuel efficiency and thereby reducing emissions.

It has been estimated that modernising airspace in the UK offers the potential to reduce future CO₂ emissions by around 10 to 20 per cent by 2050. It would also allow the aviation industry to deliver a further £29 billion to the UK economy and create nearly 116,000 more jobs by 2035.⁵

This is work that requires upfront investment in skills, technology, R&D and the complex work involved in testing and embedding new procedures and ways of working alongside the provision of an ongoing air traffic navigation service.

However NATS’s capital programme had to be paused and rescheduled in 2020 as a result of financial pressures resulting from the severe contraction of air travel during the Covid-19 pandemic, despite this being in many ways an optimal time to push ahead with necessary changes.

Prospect campaigned in 2020 for Government support to enable this work to go ahead and, ideally, accelerate,⁶ and were pleased to see the Government finally take action in March this year.⁷

Going forward, we believe this work needs to be given much greater public priority and Government support to ensure that it is not impeded or compromised by the commercial pressures faced by NATS as a privatised entity reliant on revenues provided by airlines and held to a tight cost-control regime by its economic regulator the Civil Aviation Authority.

The role of regional airports

It’s particularly important that the important role of regional airports in reducing aviation emissions is not overlooked.

Regional airports are key partners in the Airspace Change Organisation Group established to coordinate the reforms needed to reduce the environmental impact of UK flights. Investment in regional airports’ infrastructure and technology (such as taxi ways, high-speed turn-offs or improved tower and arrival management technology) can also have a big impact on fuel efficiency and carbon emissions – at the same time as improving their service to businesses and consumers and strengthening their role in supporting rural communities and regional economies.

Regional airports are also typically in a better position to accommodate business and consumer demand while avoiding levels of land traffic congestion that, it should be noted, can be a significant additional environmental impact of larger national airports.

⁴ https://www.sustainableaviation.co.uk/wp-content/uploads/2020/02/SustainableAviation_CarbonReport_20200203.pdf

⁵ <https://www.ourfutureskies.uk/media/b1nfazlo/our-future-skies-modernising-the-uk-s-infrastructure-in-the-sky-web-version-final-170320.pdf>

⁶ <https://library.prospect.org.uk/download/2020/00694>

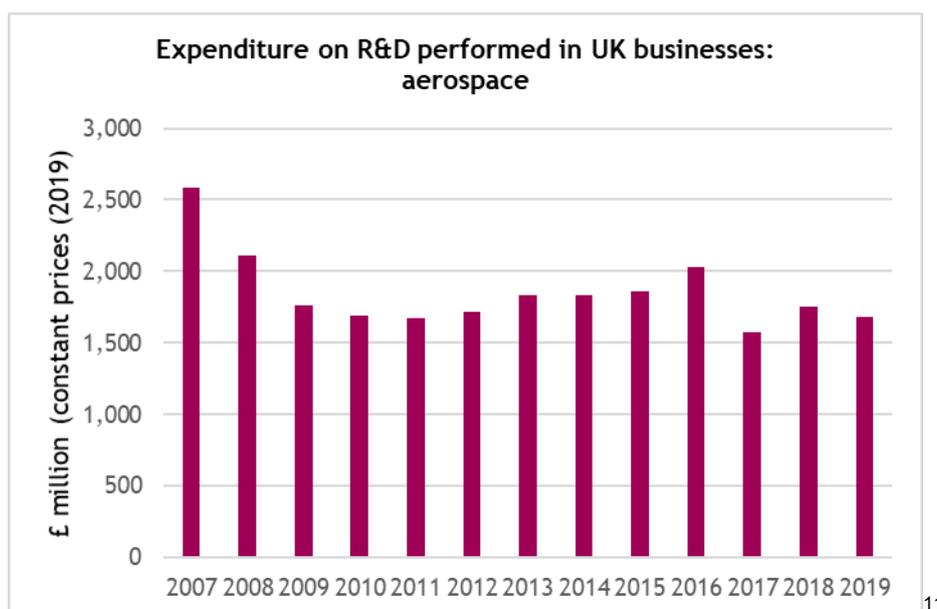
⁷ <https://www.gov.uk/government/news/55-million-to-drive-improvements-to-uks-motorways-in-the-sky>

However, as is well known, regional airports, which on the current model are heavily reliant on passenger-related revenue (such as car parking and retail) to cover fixed running costs (which cannot be flexed in line with traffic levels) have been particularly hard hit by the travel restrictions resulting from the Covid-19 pandemic. It is essential not only that they survive but that they are able to invest so that they can make their vital contribution to a more sustainable future for the industry as a whole. Prospect has advocated a Capacity Retention Scheme ensuring financial support where needed to ensure regional airports can continue to play their role as essential economic infrastructure and key contributors to the decarbonisation agenda.⁸

Aerospace R&D

Aerospace R&D is another critical variable determining the fuel efficiency and carbon emissions of aviation, as well as an area that delivers significant spillover benefits to the rest of the economy including comparatively well-paid manufacturing jobs that boost productivity.⁹

The Government's own analysis suggests that a key obstacle could be a shortfall of investment by the aerospace sector which is "made even more likely by the huge financial impact of Covid-19 on the aviation industry".¹⁰ In fact ONS data indicates that even before the pandemic hit, UK investment in aerospace R&D has been drifting downwards for much of the past decade, from (in real terms) over £2.5bn in 2007 to around £1.75bn in 2019.



11

Of course this measure, which includes both civilian and defence-related aerospace R&D, includes activities not necessarily directed to emission reduction, but clearly the maintenance and development of relevant capacity and skills, from engineering know-how to testing facilities, is a key factor here. Moreover many of the technologies now recognised as critical to reducing the carbon emissions of commercial aviation, from improved airframe design to advanced avionics and electrification, were originally developed for other

⁸ <https://library.prospect.org.uk/download/2020/00689>

⁹ https://www.ati.org.uk/media/ufvdpces/ati-insight_13-spillovers.pdf

¹⁰ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1002163/jet-zero-consultation-evidence-and-analysis.pdf

¹¹ Prospect analysis of

<https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/datasets/ukbusinnesenterpriseresearchanddevelopment>

purposes, often on the military side. Examples include “flying wing” designs first used in the Second World War that are now viewed as an important way to cut fuel consumption of civil aircraft, or advances in “fly-by-wire” control systems that enable lighter aircraft with greater design flexibility. Today specialists from BAE Systems’ military aircraft business are working with academic scientists to explore what can be learned from Peregrine Falcons for designing more fuel-efficient aircraft.¹²

The Government’s commitment to boost R&D in the public and private sectors over the coming years could help reverse this trend. “Clean growth” is one of the four “Grand Challenges” guiding the allocation of the Industrial Strategy Challenge Fund, as is the “future of mobility” within which the “future flight challenge” is said to be investing “up to” £125 million to develop greener ways to fly”, matched by £175m from industry.¹³

The Government has also recently announced, through the Aerospace Technology Institute Programme, £42.3 million of public funding, matched by an equivalent amount from the private sector, towards a liquid hydrogen propulsion system being developed by GKN Aerospace, ZeroAvia’s zero-emissions engines, and an electrified propulsion system being developed by Blue Bear Systems Research.¹⁴

Prospect is also pleased to represent many members at Highlands and Islands Airport Limited which is leading the development of a Sustainable Aviation Test Environment enabling a range of new technologies to be trialled in short-haul flights, supported with around £1.8m from Innovate UK.¹⁵ HIAL’s plans to close a number of air traffic control towers in the islands, with consequent threat to jobs and skills, are therefore a particular cause for concern.

But even these commitments amount to barely half of the real terms fall in total annual aerospace R&D since 2007. The Sustainable Aviation Commission has warned that funding for the Aerospace Technology Institute is half what is needed “to enable the UK to become a world leader in developing more efficient engines as well as hybrid, electric and hydrogen aircraft”.¹⁶

This lends weight to the judgment of the Government’s arms-length Industrial Strategy Council that the ISCF “may need to be scaled-up, perhaps significantly, if the Grand Challenges are to make significant progress”.¹⁷

Unfortunately however the Government this year disowned its previously published Industrial Strategy (abolishing the Industrial Strategy Council that subjected its delivery to independent scrutiny), leaving the status of the “Grand Challenges” even more unclear.

Alternative fuels

It has been estimated that the UK Sustainable Aviation Fuel (SAF) industry has the potential to support the UK economy with up to £930 million annual GVA and 6,500 jobs across seven regional and coastal locations across the country.¹⁸

The Government has sought to support the development of production plants turning waste into SAF in locations including Tees Valley, Ellesmere Port and Lincolnshire with £15 million of public funding.¹⁹ Innovate UK has also worked with industry partners to test

¹² <https://www.baesystems.com/en/article/research-work-on-peregrine-falcons-inspires-future-aircraft-technologies>

¹³ <https://www.ukri.org/our-work/our-main-funds/industrial-strategy-challenge-fund/future-of-mobility/future-flight-challenge/>

¹⁴ <https://www.ukri.org/news/84-million-green-aviation-technology-boost/>

¹⁵ <https://gtr.ukri.org/projects?ref=75903#>

¹⁶ <https://www.sustainableaviation.co.uk/wp-content/uploads/2020/10/Sustainable-Aviation-CSR-Submission-FINAL-240920.pdf>

¹⁷ https://industrialstrategycouncil.org/sites/default/files/attachments/ISC%20Annual%20Report%202020_0.pdf

¹⁸ <https://airlinesuk.org/wp-content/uploads/2021/07/Aviation-Jobs-in-Great-Britain.pdf>

¹⁹ <https://www.gov.uk/government/news/household-waste-and-sewage-to-be-used-in-jet-fuel-production-as-government-makes-world-leading-sustainable-aviation-fuel-commitments>

technologies for converting waste into a biofuel that could be suitable for use in commercial aircraft.²⁰

The Engineering and Physical Sciences Research Council also plays an important role in enabling research into hydrogen and alternative energy. As well as university-based projects this has supported work at STFC laboratories,²¹ such as the Green Ammonia Demonstrator at the Rutherford Appleton Laboratory in Oxford.²² STFC is working with industry partners at the Harwell Campus on ways of turning green ammonia into fuel for zero-emission aircraft (as well as shipping).²³

But again it must be asked whether this is of a scale sufficient to meet the urgency of the challenge. The Sustainable Aviation Coalition has warned that SAF “will not happen without additional financial support from the Government”, calling for £500 million of Government support over three years “to support SAF commercialisation and R&D”.²⁴

Many of these initiatives may also be impacted by Treasury-imposed constraints on the ability of public sector research establishments and institutes to recruit and retain the skills and expertise they need. The business department acknowledged some years ago that many of its agencies and partner organisations had “cited the two-year pay freeze and subsequent 1 per cent pay cap as causing problems to business delivery, particularly in specialist areas, such as science, engineering and IT”.²⁵ The STFC has repeatedly warned of difficulties “recruiting and retaining staff in Scientific, Engineering and Technology (SET) roles”.²⁶

This was highlighted as a serious impediment by a former science minister Lord Willets last year;²⁷ since then the Government has imposed a pay freeze that will have made the problem worse.

Prospect has also called for a national hydrogen strategy that could meet the challenge of developing hydrogen-based solutions to decarbonising air travel as well as a host of other energy, transport and industrial needs, in the process creating new and sustainable high quality jobs in these sectors.²⁸ Repeated delays to the publication of the Government’s published Hydrogen Strategy are therefore a serious cause for concern,²⁹ not least because of the potential blight on much-needed private investment this may be causing.

Demand and traffic levels

Prospect recognises that future demand and traffic levels cannot be ignored as a critical variable determining the possibility of moving aviation to a net zero position.

As the Government has noted, changes to the sector’s cost-base resulting from changes to carbon pricing as well as new fuel and aerospace technologies may well result in price increases and so impact demand levels indirectly.

²⁰ <https://www.renovare-fuels.co.uk/2018/11/07/innovate-uk-supports-renovares-aviation-biofuel-testing/>

²¹ <https://epsrc.ukri.org/research/ourportfolio/researchareas/hydrogen/>

²² <https://gow.epsrc.ukri.org/NGBOViewGrant.aspx?GrantRef=EP/V008145/1>

²³ <https://www.ammoniaenergy.org/articles/zero-emission-aircraft-ammonia-for-aviation/>;

<https://cen.acs.org/energy/renewables/Ammonia-route-fuel-ships-planes/98/i31>

²⁴ <https://www.sustainableaviation.co.uk/wp-content/uploads/2020/10/Sustainable-Aviation-CSR-Submission-FINAL-240920.pdf>

²⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/537468/bis-annual-report-accounts-2015-16-print.pdf

²⁶ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/725154/stfc-annual-report-accounts-2017-18-web.pdf; see also <http://www.stfc.ac.uk/news/annual-report-and-accounts-for-2016-2017/>

²⁷ <https://www.kcl.ac.uk/policy-institute/assets/the-road-to-2.4-per-cent.pdf>

²⁸ <https://hydrogenstrategynow.co.uk/wp-content/uploads/2020/06/EnergyUnionsLetter.pdf>

²⁹ <https://www.wfw.com/articles/hydrogen-in-the-uk/>; <https://www.spglobal.com/platts/en/market-insights/latest-news/electric-power/072321-uk-government-misses-latest-hydrogen-strategy-deadline>

Measures to enhance consumer choice by providing more information and transparency about environmental impacts (including the differences between routes and airlines) must also be right in principle.

Beyond this, direct measures to manage demand or incentives need to be explored with a clear focus on equity, inclusion, and the risk of perverse consequences if the disruption of cross-subsidisation models that could turn air travel back into a luxury enjoyed only by a narrow elite. Prospect believes that proposals to replace Air Passenger Duty with a levy that is higher for the most frequent flyers, but lower for those undertaking one or two trips a year merit consideration.³⁰

But the principles and criteria entailed in any such scheme (for example, whether reasons for travel should be taken into account, or what should be the time-period over which the number of flights should be counted), would raise complex issues of fairness and proportionality, while the likely impact on behaviour and traffic levels would be hard to predict with certainty. Any moves in this direction should therefore be subject to evidence-based scrutiny and inclusive debate.

A common endeavour

Accelerating the decarbonisation of aviation is a major challenge raising numerous complex issues and trade-offs. It will require sustained collaborative work bringing together Government and industry and drawing in expertise and perspectives from across civil society. The establishment of the Jet Zero Council is therefore a positive step, though it is not yet clear whether its resourcing and work programme are match the urgency of the task.³¹

It is however to be regretted that, as others have pointed out, the Council includes no workplace representatives. Here, and throughout the work to be done in moving toward net zero, worker voice and commitment to just transition will be critical – both for engaging workers in the changes that will need to be made and in harnessing the unique insights and experience that they can contribute to the task.

September 2021

³⁰ See for example <https://neweconomics.org/uploads/files/frequent-flyer-levy.pdf>

³¹ <https://questions-statements.parliament.uk/written-questions/detail/2021-03-17/170658/>